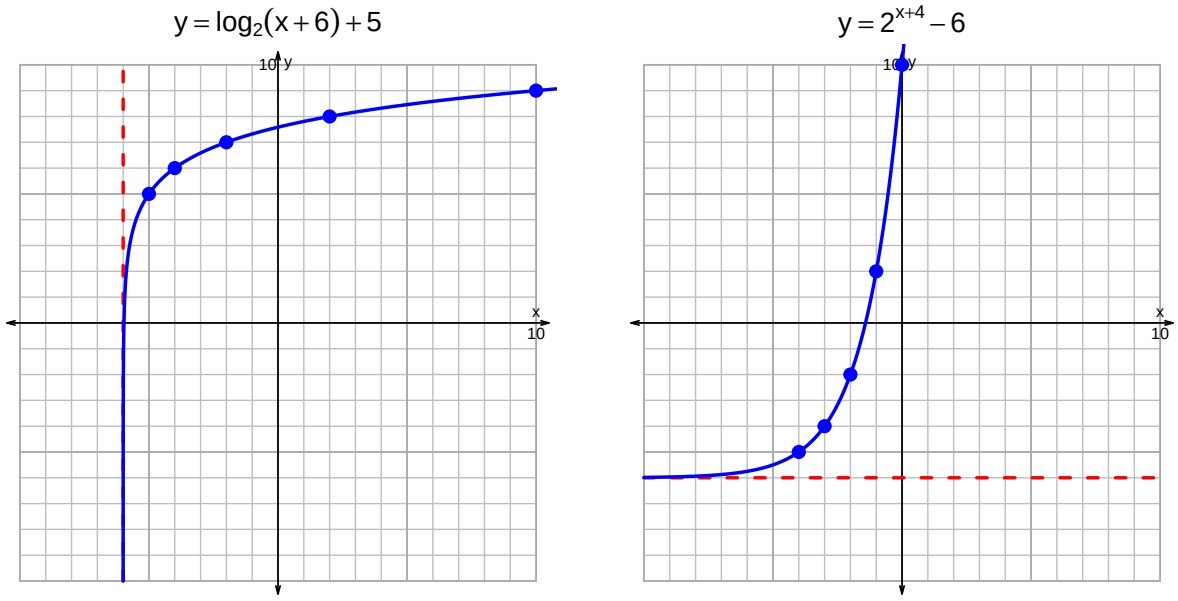
Name: Date:

S18QUIZ: EXP LOG (SLTN v294)

1. Graph $y = \log_2(x+6)+5$ and $y = 2^{x+4}-6$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-19 = \left(\frac{-7}{3}\right) \cdot 10^{4t/5}$$

Divide both sides by $\frac{-7}{3}$.

$$\frac{19 \cdot 3}{7} = 10^{4t/5}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{19 \cdot 3}{7}\right) = \frac{4t}{5}$$

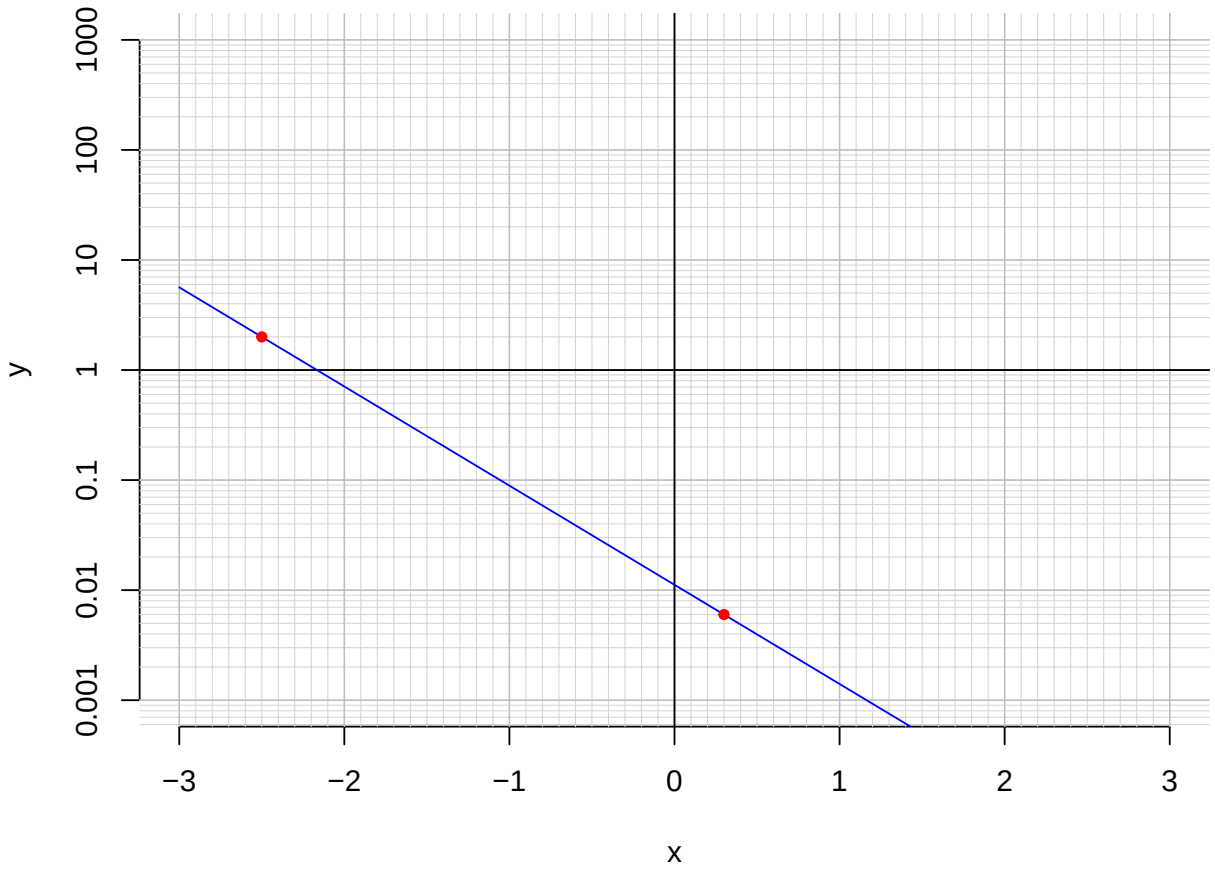
Divide both sides by $\frac{4}{5}$.

$$\frac{5}{4} \cdot \log_{10}\left(\frac{19 \cdot 3}{7}\right) = t$$

Switch sides.

$$t = \frac{5}{4} \cdot \log_{10}\left(\frac{19 \cdot 3}{7}\right)$$

3. An exponential function $f(x) = 0.0112 \cdot e^{-2.07x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(0.3)$.

$$f(0.3) = 0.006$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{-1}{2.07} \cdot \ln\left(\frac{x}{0.0112}\right)$$

c. Using the plot above, evaluate $f^{-1}(2)$.

$$f^{-1}(2) = -2.5$$